APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,897	09/07/2006	Tobias Lang	3804	6440

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EXAMINER
WEST, JEFFREY R

ART UNIT	PAPER NUMBER
2857	

NOTIFICATION DATE	DELIVERY MODE
11/27/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

striker@strikerlaw.com

		Application No.	Applicant(s)	
Office Action Summary		10/591,897	LANG, TOBIAS	
		Examiner	Art Unit	
		Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 August 2009</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1 and 4-7</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1 and 4-7</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>25 October 2007</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☒ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities:

In claim 7, line 8, to avoid problems of antecedent basis, "chronological position"

should be ---chronological position (Ts)---.

In claim 7, line 9, to avoid problems of antecedent basis, "as a characteristic"

should be ---as the characteristic---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Claims 1 and 7 are considered to be vague and indefinite because they each

include the equation $Ts \sim (\sum_{K=1}^{n} K * A(K)) / \sum_{K=1}^{n} A(K)$, which includes undefined variables

"K" and "A" making it unclear to one having ordinary skill in the art as to what the

equation defines and how the equation is used in accordance with the remainder of

the claim.

Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, because they

incorporate the lack of clarity present in parent claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 4, 6, and 7, as may best be understood, are rejected under 35 U.S.C.

103(a) as being unpatentable over JP Patent Application Publication No. 2003-

050145 to Eshita et al. in view of U.S. Patent No. 5,633,715 to Ai et al.

With respect to claim 1, Eshita discloses an ultrasonic flow sensor (0014, lines 1-

4), comprising at least one ultrasonic transducer for transmitting and receiving

ultrasonic signals (0014, lines 1-4), and a receiver unit connected to the ultrasonic

transducer (0014, lines 4-12) that detects a predetermined event of the ultrasonic

signal as a reception time (0029, lines 1-4), wherein the receiver unit determines a

time of a value characteristic of the ultrasonic signal (0026, lines 1-16) as well as a

time shift of the time relative to the reception time and uses the time shift to

determine a correct time value for the reception time (0032, lines 1-13).

As noted above, the invention of Eshita teaches many of the features of the

claimed invention and while Eshita does disclose an ultrasonic flow sensor including

a receiver unit that determines a time of a value characteristic of the ultrasonic signal

as a maximum amplitude of the ultrasonic signal (0026, lines 1-16), Eshita is not

explicit in specifying that the receiver unit determines a chronological position of a

focal point of either the ultrasonic signal or its envelope curve as the characteristic

value.

Ai teaches a centroid approach for estimating modulation peak in broad-

bandwidth interferometry comprising means for determining a chronological position

of a focal point of a signal as $$Ts \sim (\sum_{K=1}^{n} K * A(K)) / \sum_{K=1}^{n} A(K)$$ (column 7, lines 10-24).

It would have been obvious to one having ordinary skill in the art to modify the

invention of Eshita to explicitly indicate that the receiver unit determines a

chronological position of a focal point of either the ultrasonic signal or its envelope

curve as the characteristic value, as taught by Ai, because Eshita explicitly discloses

determining a time of a value characteristic of the ultrasonic signal as a maximum

amplitude of the ultrasonic signal (see, Eshita, Figure 2) and Ai suggests a

corresponding means for determining such a maximum location using an accurate

and simple calculation that is effective when dealing with a plurality of peaks that are

difficult to distinguish (column 3, line 55 to column 4, line 38 and column 7, lines 10-

24).

With respect to claim 4, the combination teaches the invention as claimed above

and further Eshita discloses that the receiver unit includes a comparator whose input

is supplied with a transducer output signal and a reference signal (0022, lines 1 to 0023, line 13), and the receiver unit determines a piece of information about the time of the characteristic value from an output signal of the comparator (0026, lines 1-16).

With respect to claim 6, the combination teaches the invention as claimed above and further Eshita discloses that the reception time is corrected as a function of the time shift (0032, lines 1-13).

With respect to claim 7, Eshita discloses a method for detection of an ultrasonic signal (0014, lines 1-4) in an ultrasonic transducer by means of a receiver unit (0014, lines 1-4), which detects a predetermined event of the ultrasonic signal as a reception time (0029, lines 1-4), wherein the receiver unit determines a time of a value characteristic of the ultrasonic signal (0026, lines 1-16) and determines a time shift of the time in relation to the reception time and uses the time shift to determine a correct time value for the reception time (0032, lines 1-13).

As noted above, the invention of Eshita teaches many of the features of the claimed invention and while Eshita does disclose an ultrasonic flow sensor including a receiver unit that determines a time of a value characteristic of the ultrasonic signal as a maximum amplitude of the ultrasonic signal (0026, lines 1-16), Eshita is not explicit in specifying that the receiver unit determines a chronological position of a focal point of either the ultrasonic signal or its envelope curve as the characteristic value.

Ai teaches a centroid approach for estimating modulation peak in broad-
bandwidth interferometry comprising means for determining a chronological position

of a focal point of a signal as $Ts \sim (\sum_{K=1}^{n} K * A(K)) / \sum_{K=1}^{n} A(K)$. (column 7, lines 10-24).

It would have been obvious to one having ordinary skill in the art to modify the
invention of Eshita to explicitly indicate that the receiver unit determines a
chronological position of a focal point of either the ultrasonic signal or its envelope
curve as the characteristic value, as taught by Ai, because Eshita explicitly discloses
determining a time of a value characteristic of the ultrasonic signal as a maximum
amplitude of the ultrasonic signal (see, Eshita, Figure 2) and Ai suggests a
corresponding means for determining such a maximum location using an accurate
and simple calculation that is effective when dealing with a plurality of peaks that are
difficult to distinguish (column 3, line 55 to column 4, line 38 and column 7, lines 10-
24).

6. Claims 1 and 4-7, as may best be understood, are rejected under 35 U.S.C.
103(a) as being unpatentable over Applicant Admitted Prior Art in view of JP Patent
Application Publication No. 2003-050145 to Eshita et al. and further in view of U.S.
Patent No. 5,633,715 to Ai et al.

With respect to claim 1, Applicant admits as prior art an ultrasonic flow sensor (page 1, line 22 and Figure 1 – page 5, line 17), comprising at least one ultrasonic transducer for transmitting and receiving ultrasonic signals (page 1, lines 22-24 and 26-28 and Figure 1 – page 5, line 17), and a receiver unit connected to the ultrasonic transducer (page 6, line 30 to page 7, line 2) that detects a predetermined event of the ultrasonic signal as a reception time (page 6, lines 29-30), wherein the receiver unit determines a time of a value characteristic of the ultrasonic signal (page 7, lines 4-6) as a maximum amplitude of the ultrasonic signal (page 7, lines 4-6).

As noted above, the invention of AAPA teaches many of the features of the claimed invention and while Applicant does admit as Prior Art determining a reception time as well as a time value of a characteristic value of the ultrasonic signal, Applicant does not explicitly admit as prior art correcting the reception time based on a time shift of a time of the characteristic value relative to the reception time.

Eshita discloses an ultrasonic flow sensor (0014, lines 1-4), comprising at least one ultrasonic transducer for transmitting and receiving ultrasonic signals (0014, lines 1-4), and a receiver unit connected to the ultrasonic transducer (0014, lines 4-12) that detects a predetermined event of the ultrasonic signal as a reception time (0029, lines 1-4), wherein the receiver unit determines a time of a value characteristic of the ultrasonic signal (0026, lines 1-16) as well as a time shift of the time relative to the reception time and uses the time shift to determine a correct time

value for the reception time, wherein the reception time is corrected as a function of

the time shift (0032, lines 1-13).

It would have been obvious to one having ordinary skill in the art to modify the

invention of AAPA to explicitly include correcting the reception time based on a time

shift of a time of the characteristic value relative to the reception time, as taught by

Eshita, because, as suggested by Eshita, the combination would have improved the

system of AAPA by correcting for incorrect wave arrival timing to increase the

precision of the arrival timing resulting in greater accuracy in the flow determination

of AAPA (0007, lines 2-15).

As noted above, the invention of AAPA and Eshita teaches many of the features

of the claimed invention and while the invention of AAPA and Eshita does disclose

an ultrasonic flow sensor including a receiver unit that determines a time of a value

characteristic of the ultrasonic signal as a maximum amplitude of the ultrasonic

signal and corrects a reception time based on a time shift of a time of a

characteristic value relative to the reception time, the combination is not explicit in

specifying that the receiver unit determines a chronological position of a focal point

of either the ultrasonic signal or its envelope curve as the characteristic value.

Ai teaches a centroid approach for estimating modulation peak in broad-

bandwidth interferometry comprising means for determining a chronological position

of a focal point of a signal as $Ts \sim \dfrac{(\sum\limits_{K=1}^{n} K * A(K))}{\sum\limits_{K=1}^{n} A(K)}$ (column 7, lines 10-24).

It would have been obvious to one having ordinary skill in the art to modify the invention of AAPA and Eshita to explicitly indicate that the receiver unit determines a chronological position of a focal point of either the ultrasonic signal or its envelope curve as the characteristic value, as taught by Ai, because AAPA and Eshita explicitly disclose determining a time of a value characteristic of the ultrasonic signal as a maximum amplitude of the ultrasonic signal (see, AAPA, page 7, lines 4-6 and Eshita, Figure 2) and Ai suggests a corresponding means for determining such a maximum location using an accurate and simple calculation that is effective when dealing with a plurality of peaks that are difficult to distinguish (column 3, line 55 to column 4, line 38 and column 7, lines 10-24).

With respect to claim 4, the combination teaches the invention as claimed above and further Applicant admits as prior art that the receiver unit includes a comparator whose input is supplied with a transducer output signal and a reference signal (page 6, line 30 to page 7, line 2 and Figure 5 – page 5, line 29), and the receiver unit determines a piece of information about the time of the characteristic value from an output signal of the comparator (page 7, lines 2-6).

With respect to claim 5, the combination teaches the invention as claimed above and further Applicant admits as prior art that the reference signal supplied to the comparator is a threshold not equal to zero (page 6, line 30 to page 7, line 4 and

page 7, lines 14-15) and the output signal of the comparator is a pulse width modulated signal from which the time of the characteristic value is determined (page 7, lines 4-6 and 14-15).

With respect to claim 6, as noted above, the invention of AAPA teaches many of the features of the claimed invention and while Applicant does admit as Prior Art determining a reception time as well as a time value of a characteristic value of the ultrasonic signal as a maximum amplitude of the ultrasonic signal, Applicant does not explicitly admit as prior art correcting the reception time based on a time shift of a time of the characteristic value relative to the reception time.

Eshita discloses an ultrasonic flow sensor (0014, lines 1-4), comprising at least one ultrasonic transducer for transmitting and receiving ultrasonic signals (0014, lines 1-4), and a receiver unit connected to the ultrasonic transducer (0014, lines 4-12) that detects a predetermined event of the ultrasonic signal as a reception time (0029, lines 1-4), wherein the receiver unit determines a time of a value characteristic of the ultrasonic signal (0026, lines 1-16) as well as a time shift of the time relative to the reception time and uses the time shift to determine a correct time value for the reception time, wherein the reception time is corrected as a function of the time shift (0032, lines 1-13).

It would have been obvious to one having ordinary skill in the art to modify the invention of AAPA to explicitly include correcting the reception time based on a time shift of a time of the characteristic value relative to the reception time, as taught by

Eshita, because, as suggested by Eshita, the combination would have improved the system of AAPA by correcting for incorrect wave arrival timing to increase the precision of the arrival timing resulting in greater accuracy in the flow determination of AAPA (0007, lines 2-15).

With respect to claim 7, Applicant admits as prior art a method for detection of an ultrasonic signal in an ultrasonic transducer (page 1, lines 22-24 and 26-28 and Figure 1 – page 5, line 17) by means of a receiver unit (page 6, line 30 to page 7, line 2), which detects a predetermined event of the ultrasonic signal as a reception time (page 6, lines 29-30), wherein the receiver unit determines a time of a value characteristic of the ultrasonic signal (page 7, lines 4-6) as a maximum amplitude of the ultrasonic signal (page 7, lines 4-6).

As noted above, the invention of AAPA teaches many of the features of the claimed invention and while Applicant does admit as Prior Art determining a reception time as well as a time value of a characteristic value of the ultrasonic signal, Applicant does not explicitly admit as prior art correcting the reception time based on a time shift of a time of the characteristic value relative to the reception time.

Eshita discloses an ultrasonic flow sensor (0014, lines 1-4), comprising at least one ultrasonic transducer for transmitting and receiving ultrasonic signals (0014, lines 1-4), and a receiver unit connected to the ultrasonic transducer (0014, lines 4-12) that detects a predetermined event of the ultrasonic signal as a reception time

(0029, lines 1-4), wherein the receiver unit determines a time of a value characteristic of the ultrasonic signal (0026, lines 1-16) as well as a time shift of the time relative to the reception time and uses the time shift to determine a correct time value for the reception time, wherein the reception time is corrected as a function of the time shift (0032, lines 1-13).

It would have been obvious to one having ordinary skill in the art to modify the invention of AAPA to explicitly include correcting the reception time based on a time shift of a time of the characteristic value relative to the reception time, as taught by Eshita, because, as suggested by Eshita, the combination would have improved the system of AAPA by correcting for incorrect wave arrival timing to increase the precision of the arrival timing resulting in greater accuracy in the flow determination of AAPA (0007, lines 2-15).

As noted above, the invention of AAPA and Eshita teaches many of the features of the claimed invention and while the invention of AAPA and Eshita does disclose an ultrasonic flow sensor including a receiver unit that determines a time of a value characteristic of the ultrasonic signal as a maximum amplitude of the ultrasonic signal and corrects a reception time based on a time shift of a time of a characteristic value relative to the reception time, the combination is not explicit in specifying that the receiver unit determines a chronological position of a focal point of either the ultrasonic signal or its envelope curve as the characteristic value.

Ai teaches a centroid approach for estimating modulation peak in broad-

bandwidth interferometry comprising means for determining a chronological position

of a focal point of a signal as $Ts \sim (\sum_{K=1}^{n} K * A(K)) / \sum_{K=1}^{n} A(K)$. (column 7, lines 10-24).

It would have been obvious to one having ordinary skill in the art to modify the

invention of AAPA and Eshita to explicitly indicate that the receiver unit determines a

chronological position of a focal point of either the ultrasonic signal or its envelope

curve as the characteristic value, as taught by Ai, because AAPA and Eshita

explicitly disclose determining a time of a value characteristic of the ultrasonic signal

as a maximum amplitude of the ultrasonic signal (see, AAPA, page 7, lines 4-6 and

Eshita, Figure 2) and Ai suggests a corresponding means for determining such a

maximum location using an accurate and simple calculation that is effective when

dealing with a plurality of peaks that are difficult to distinguish (column 3, line 55 to

column 4, line 38 and column 7, lines 10-24).

Response to Arguments

7. Applicant's arguments with respect to claims 1 and 4-7 have been considered but

are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure.

U.S. Patent No. 5,793,704 to Freger teaches a method and device for ultrasonic ranging.

U.S. Patent No. 4,660,564 to Benthin et al. teaches an apparatus for measuring pulsetile part-structures within a living body.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrey R. West/
Primary Examiner, Art Unit 2857

November 24, 2009